

US009510849B2

# (12) United States Patent

Clark, III et al.

#### (54) DEVICES AND METHODS FOR PERFORMING SUBCUTANEOUS SURGERY

(71) Applicant: Ulthera, Inc., Mesa, AZ (US)

(72) Inventors: Robert L. Clark, III, Hayward, CA

(US); James E. Chomas, Boulder, CO (US); Adnan I. Merchant, Fremont, CA (US); Ben F. Brian, III, Menlo

Park, CA (US)

(73) Assignee: ULTHERA, INC., Mesa, AZ (US)

(\*) Notice: Subject to any disclaimer, the term of this

patent is extended or adjusted under 35

U.S.C. 154(b) by 297 days.

This patent is subject to a terminal dis-

claimer.

(21) Appl. No.: 14/296,353

(22) Filed: Jun. 4, 2014

(65) Prior Publication Data

US 2015/0066011 A1 Mar. 5, 2015

## Related U.S. Application Data

(63) Continuation of application No. 14/060,437, filed on Oct. 22, 2013, now Pat. No. 9,358,064, which is a continuation-in-part of application No. 13/712,429, filed on Dec. 12, 2012, now Pat. No. 9,011,473, which

(Continued)

(51) **Int. Cl.** *A61B 17/32* 

A61B 18/14

(2006.01) (2006.01)

(Continued)

(52) U.S. Cl.

CPC . **A61B** 17/32002 (2013.01); **A61B** 17/320016 (2013.01); **A61B** 17/32093 (2013.01);

(Continued)

(58) Field of Classification Search

CPC .. A61B 17/00; A61B 17/32; A61B 17/3202; A61B 17/320016; A61B 17/32016; A61B 17/32093; A61B 2017/32004; A61B 2017/320052; A61B 18/14; A61B 18/18;

(10) Patent No.: US 9,510,849 B2

(45) **Date of Patent:** 

\*Dec. 6, 2016

A61B 18/20; A61B 18/1477; A61B 19/24; A61N 1/306; A61N 1/327; A61N 1/328; A61N 1/403; A61M 37/00

USPC ....... 606/161-162, 166-167, 170-172, 185,

606/190–191, 198; 600/131, 132, 135–137, 600/565, 571; 604/115–117, 542

See application file for complete search history.

### (56) References Cited

#### U.S. PATENT DOCUMENTS

2,370,529 A 2/1945 Fuller 2,490,409 A 12/1949 Brown (Continued)

#### FOREIGN PATENT DOCUMENTS

CA 1232837 2/1988 CA 1239092 7/1988 (Continued)

# OTHER PUBLICATIONS

Green, Jeremy B. et al. Therapeutic approaches to cellulite. Seminars in Cutaneous Medicine and Surgery, vol. 34, Sep. 2015.

(Continued)

Primary Examiner — David C Eastwood (74) Attorney, Agent, or Firm — Knobbe Martens Olson & Bear, LLP

#### (57) ABSTRACT

Devices and methods for performing subcutaneous surgery in a minimally invasive manner are provided. The methods include application of reduced air pressure in a recessed area of a handpiece placed over a section of skin and drawing the section of skin and subcutaneous tissue into the recessed area. In a subsequent step a tool is inserted through a tool conduit in the handpiece and through the skin into the subcutaneous tissue, enabling the performance of the desired surgery. Common surgical procedures include dissection and ablation. The devices and methods can be directed at the treatment of skin conditions like atrophic scars, wrinkles, or other cosmetic issues, at treatments like or promoting wound healing or preventing hyperhidrosis, or can be used for creating space for various implants.

# 19 Claims, 45 Drawing Sheets



